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LOT-TO-LOT VARIATIONS OF POWDERS, PRIMER SUBSTITUTION AND COMPONENT CHANGE OFTEN RAISE PRESSURES TO UNSAFE LEVELS. THE USER MUST ASSUME THE ENTIRE RISK OF USING THIS DATA FOR LOADING PURPOSES.

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User Data:	Date:4-Aug-2020	Time:11:57:56	File: 458lott_550gr woodleighsn_n550.dat
Comment	Gareth Dicker 550gr Woodleighs SN with N550 Powder		
Cartridge / Caliber	.458 Lott	Bullet	.458, 500gr VRG-2, Peregrine
Maximum Average Pressure, allowed	4300 bar	62366 psi. (Piezo CIP)	with hollowbase
Groove Caliber	11.63 mm	0.458 in.	Bullet Weight 33.37 gm 515.0 gr.
Case Capacity, overflow	7.142 cm ³	110.0 gr. H2O	Bullet Length 39.12 mm 1.540 in.
Case Length	71.12 mm	2.800 in.	Bullet Seating Depth 18.8 mm 0.740 in.
Cartridge O.A. Length	91.44 mm	3.600 in.	Barrel/Tube Length 609.6 mm 24.0 in.
Shot Start / Init Pressure	379.0 bar	5497 psi.	Cross Section Area of Bore 1.0494 cm ² 0.16266 in. ²
Propellant type	Vihtavuori N550		
Charge Weight	5.314 gm	82.0 gr.	Load Density 1.025 gm/cm ³ 259.2 gr./in. ³
Heat of Explosion, Potential	4050 J/gm	262.4 J/gr.	Energy Density of Charge 4150 J/cm ³ 68006 J/in. ³
Propellant Solid Density	1.63 gm/cm ³	412.21 gr./in. ³	Used Ratio of Specific Heats cp/cv 1.223
Burning Rate Factor Ba	0.465 1/s		Weighting Factor 0.5
Burning Function Limit Z1	0.455		Prog.-/ Degressivity Factor a0 1.53
Factor b	1.764		Bulk Density 0.940 gm/cm ³ 237.7 gr./in. ³

Calculated and Estimated Data:

Bullet Shank Seating Depth	18.8 mm	0.74 in.	Capacity Displaced by Seated Bullet	1.956 cm ³	0.1194 in. ³
Useable Case Capacity	5.186 cm ³	0.3165 in. ³	Bullet Travel at Muzzle Exit	557.28 mm	21.94 in.
Loading Ratio("Density") / Filling	109.0 % = compressed		Charge Fraction Burnt at Shot Start	1.52 %	

Predicted Data:

Maximum Chamber Pressure	4102 bar	59499 psi.	Bullet Travel at Pmax	26.7 mm	1.05 in.
at Muzzle Exit:					
Bullet Velocity	678.3 m/s	2225 fps.	Pressure at Muzzle	445 bar	6456 psi.
Bullet Energy	7678 Joule	5663 ft.lbs.	Bullet Barrel Time	1.327 ms	
Propellant Burnt	99.0 %		Ballistic Efficiency	35.7 %	

Additional Data:

Powder Lot		Primer Type and Lot
Bullet Lot		Case Manufacturer
Mfg. Sign		Proving Loc.
Measured Muzzle Vel., StdDev.		Measured Pressure, StdDev.

WARNING: Near Maximum Average Pressure - unknown tolerances may cause dangerous pressures !
 Real maximum (peak) of pressure is reached while bullet moves within barrel.
 End of combustion occurs after the bullet's base passes muzzle.

